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AUTHOR	Hall, Arthur D.
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ABSTRACT

This curriculum guide is prepared for the Aerospace Education II series publication entitled "Military Aerospace." Sections in the guide include objectives (traditional and behavioral), suggested outline, orientation, suggested key points, suggestions for teaching, instructional aids, projects, and further reading. A separate sheet is attached after each chapter for teachers' own ideas. Page references corresponding to the textbook are given for major concepts and ideas stressed. (PS)

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SEPTEMBER 1973

AE-II

INSTRUCTIONAL UNIT VI

MILITARY AEROSPACE

PREPARED UNDER
THE DIRECTION OF

MAJOR ARTHUR D. HALL
AEROSPACE EDUCATION COURSE DIRECTOR

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INSTRUCTIONAL UNIT VI

MILITARY AEROSPACE

INSTRUCTIONAL UNIT OBJECTIVES - When the book is completed each student should:

a. Understand the combat and noncombat roles of US armed services as instruments of national policy.

b. Know the primary missions and operations of the unified, specified, and combined operational commands.

c. Be familiar with the mission and typical operations of the Air Force support commands and separate operating agencies.

d. Be familiar with the primary missions and operations of Army, Navy, and Marine aviation.

INSTRUCTIONAL UNIT VI CHAPTERS:

		Page
I.	Military Aerospace Forces	VI-1
II.	Operational Major Commands	VI-10
III.	Operational Major Commands: ADC, MAC, AAC, USAFSO	VI-26
IV.	Support Major Commands and Separate Operating Agencies	VI-40
V.	Army, Navy, and Marine Corps Aerospace Forces	VI-51

CHAPTER I - MILITARY AEROSPACE FORCES

This chapter describes the nature of national objectives and policies and states the functions of armed forces as instruments for pursuing these objectives and policies in peacetime and in varying degrees of conflict. It outlines the basic missions of strategic offensive, strategic defensive, and tactical operations or "general purpose" forces. It explains the nature and functions of unified and specified commands in fulfilling these missions.

1. OBJECTIVES:

   a. Traditional Objectives - Each student should:

      (1) Understand the differences between national policies and national objectives.

      (2) Understand how military forces can contribute to the fulfillment of national policies and objectives by peaceful as well as forceful actions.

      (3) Know the reasons for classifying US military forces as strategic offensive, strategic defensive, and general purpose.

      (4) Be familiar with unified and specified commands of US military forces and their employment in strategic and general purpose actions.

   b. Behavioral Objectives - Each student should be able to:

      (1) Summarize the principal US policies and objectives in the field of foreign relations and state what instruments are used to achieve them.

      (2) Explain at least four ways in which US military forces can be employed peacefully.

      (3) Outline the reasons for classifying US military forces as strategic offensive, strategic defensive, and general purpose.

      (4) Identify the organization and functions of the unified and specified commands in relation to their missions.

2. SUGGESTED OUTLINE:

a. National policies and objectives

(1) Military is just one of several instruments of national power used to gain national objectives and support policies

(2) Fundamental long-term objectives

(a) Territorial security and freedom of seas (or aerospace)

(b) Preservation of constitution and political liberties

(c) National well being in environment of international friendship

(3) Modern objectives

(a) Deterrence of war

(b) Resistance to Communism and other totalitarian regimes

(4) Policy--means of gaining objectives

(a) Maintaining military strength

(b) Economic and military aid to other nations

b. Peacetime and "cold war" uses of military power

(1) Capability demonstrations

(2) Rapid deployments

(3) Humanitarian activities

(4) Show of force

c. The instrument of power

(1) Principles of military posture

(a) Deterrence of aggression--must be realistic

(b) Positive control--clear line of authority and survivable system for command and control

(c) Flexibility--must have options, ability to fight limited as well as nuclear war

(2) Organization

(a) Department of the Air Force

(b) Levels and types of AF organization

(3) Elements of military power

(a) Strategic offense--aerospace nuclear capability (SAC and Naval FBM forces)

(b) Strategic defense--all US and Canadian aerospace defense forces under NORAD

(c) General purpose--warfare at various levels (tactical forces of all services)

3. ORIENTATION

a. With the exception of this unit, the emphasis of Aerospace Education II is on other than military matters or the Air Force. AE-II has three units on aeronautics and one on civil aviation and facilities. Here is a unit on national defense and the role of the Air Force in maintaining it. It describes military missions and operations and discusses the capabilities of aircraft and missiles not merely as aerospace vehicles but as weapons. "Military Aerospace" and "Defense of the United States" are the only units in the curriculum that discuss such matters. They give the AFJROTC student a preview of the military mission he may be called on to accomplish in defense of his country if he chooses to become a member of the Air Force. This unit is vital, then, in terms of motivation and of information.

b. The subject matter of this unit is new to the average student. Little if any of his general educational background or his prior experience with the Aerospace Education curriculum has given him any sense of the mission, organization and operations of US military aerospace forces, or the various commands of the Air Force. Don't expect too much and be patient.

c. Chapter I is a broad introduction. It does not stress the subject from an organizational point of view--the Department of Defense, the Air Force, the major commands, etc. Rather, it is mission oriented. It discusses the basic objectives of national survival and the ways in which military forces may contribute to our security in peace and war.

4. SUGGESTED KEY POINTS:

a. Military aerospace forces should be considered as a military instrument used to gain national objectives and support national policies.

(1) Objectives are the ends that determine policy (the means). The basic objective of national policy is national security. Long-term objectives pursued throughout the nation's history have been:

(a) Maintain the nation's territorial integrity and free access to international waters (and, in modern times, aerospace).

(b) Preserve the nation's constitutional form of government and political liberties.

** V-9125 pp 503-572

(c) Foster national well being in an environment of international friendship.

(2) In modern times, because of the increase in power of totalitarian regimes threatening world security, additional objectives have governed national policy.

(a) Deter war

(b) Prevent expansion of Communist power and influence

(c) Maintain military capability for victory in limited or general war

(d) Strengthen the economic and military power of the free world

(e) Increase the will and determination of free peoples to resist Communist aggression and subversion

(f) Create conditions under which free institutions and open societies can be more attractive than totalitarian systems.

(3) Policies are the means of pursuing objectives. These can vary with changing times. At one time in our history a policy of isolationism worked, keeping us free from involvement in foreign quarrels. Today--due to modern weapons and aerospace technology as well as political threats on a global scale--US policy is one of involvement in world affairs.

(4) Instruments of national power are sometimes defined as political, economic, psychosocial, and military. These are used to improve relations with foreign nations as well as to deter or discourage actual or potential aggressors. The military instrument is also used in all these ways.

b. The military instrument of national power has many uses in times of peace and "cold war" as well as in combat. Some of these are:

(1) Shows of force, such as the Cuban missile crisis of 1962.

(2) Rapid deployments to trouble spots anywhere in the world, such as the Congo in 1960-1964 and the Dominican Republic in 1965.

*** V-9125 pp 415-426

(3) The famed Berlin Airlift of 1948-49, to break the Soviet blockage of that city.

(4) Capability demonstrations of speed, distance, altitude, etc., including space exploration, to enhance a nation's prestige. Example: the Russian "Sputnik" and the US Apollo landing on the moon.

(5) Humanitarian activities, including various kinds of military civic action, medical aid, disaster evacuation, hurricane and earthquake relief, and airlifting of food and supplies. Examples: Tropical Storm Agnes and the earthquake in Managua, Nicaragua, both in 1972.

c. The main function of military forces, nevertheless, is deterrence of war and the maintenance of the ability to wage war should deterrence fail.

(1) Three basic principles govern the US military posture.

(a) Deterrence--prevention of action through fear of consequences.

(b) Positive control--command and control system must be effective over all forces and weapons, be survivable in case of attack (airborne, seaborne and underground command posts), and have clearly established lines of authority.

(c) Flexibility--variety of military forces capable of waging war at all levels, rather than just the capability of massive nuclear response.

(2) A brief look at the organization of the military instrument shows:

(a) Line of operational command

(b) Department of the Air Force

(c) Types of commands

1 Major commands

2 Operational commands

3 Support commands

(3) Modern warfare demands new functional organizations of armed services for combat. Money must be budgeted and resources allocated according to military missions which cut across traditional command lines--even across basic divisions of the Army, Navy, and Air Force. Unified commands draw on more than one service for these main tasks:

(a) Strategic offense--ability to deter war by maintaining the ability to make a full scale retaliatory attack on a major world power--that is, a nuclear aerospace attack. Forces devoted to this purpose include the Air Force's Strategic Air Command (SAC), which is designated a specified command under direct Presidential command, and the Navy's Fleet Ballistic Missile (FBM) forces, making up the TRIAD--heart of US strategic offensive system.

(b) Strategic defense--ability to defend against a strategic aerospace attack--the aerospace defense of the North American continent, with Army, Navy, Air Force, and Canadian Forces elements under combined command of NORAD.

(c) General purpose--ability to conduct warfare at any level and meet various national objectives short of war. Under this category fall the bulk of Army, Navy and Marine surface and air forces, and the tactical commands (Tactical Air Command and theater commands) of the Air Force.

5. SUGGESTIONS FOR TEACHING:

a. Suggested time: 2-3-4 (Translation--if you teach two academic periods per week we recommend you devote two hours to this subject. If you teach three periods per week the recommendation is that you limit the coverage to three periods. If you teach four academic hours per week you could devote four periods to the subject. These "Suggested times" are just that--recommendations. Adjust the emphasis according to interest and talent--both yours and the students'.)

b. The subject of national policy and objectives is interesting and thought-provoking for adults. It can be for high school students, too. If student dissent with national objectives and policy is expressed at this level (and it sometimes is), certainly the positive approach should also get an airing. High school debates on national policy may not be polished, but should be encouraged. Admitting the essential need for a military instrument (for the sake of national survival) is perhaps a strong enough point to make and deserves top priority as a desired learning outcome.

c. Another way to present this chapter is to use it as both introduction and conclusion. At the end of the unit, after the students have acquired some background on the nature and composition of US military aerospace forces, return to a discussion of their fundamental mission of insuring national survival, and a review of main warfare and force types.

d. On use of instructional aids (see below): specific documentation of this chapter is lacking, but certain aids can have motivational effect. Maps and charts should be in view to provide a sense of the troubled world in which the United States must employ its military instrument. Humanitarian airlift is specifically referred to in this chapter, and films on this subject may be more effective now than later, when MAC is studied in more detail. SFP 1196 is old, but underscores point made in this chapter.

e. Grab Bag (several ideas that may stimulate your imagination)--for an attention step, hold up your hand and ask for some uses (on paper or verbally). It can be used to help or to hurt, as can the military instrument of national power. Compare the strategic offensive, strategic defensive, and general purpose forces to the offensive, defensive, and special units of a football team. Have your students bring in questions and try to stump the class. Have them respond to a request for aid during a simulated natural disaster.

6. INSTRUCTIONAL AIDS:

   a. Maps and Charts

      (1) GH 2 USAF Physical-Political world chart

      (2) AGS USAF World Alliance Systems Graphic

      (3) AMS 1140 Political World Chart

   b. Films:

      (1) AFIF 143 A Free People, 20 min, color, 1965.

      (2) SFP 1196 Humanitarian Airlifts (narrated by Bob Hope), 22 min, B&W, 1963.

      (3) SFP 1870 Building a Nation, 9 min, color, 1968.

7. PROJECTS:

   a. See textbook page 17.

   b. Instructor might organize a debate "Resolved: The United States should return to a policy of isolationism."

8. FURTHER READING:

   a. AFROTC, A Quarter Century of Air Power, Maxwell AFB, Al, Air University, 1973.

   b. "Air Force Magazine" Annual Air Force Almanac issue.

   c. Morgenthau, Hans J., Politics Among Nations, 5th Ed. New York: Alfred A. Knopf, 1973.

   d. Glines, Carroll V., Jr., The Compact History of the U.S. Air Force, New York: Hawthorne Books, Inc.

IDEAS FOR IMPROVEMENT OF THE TEXTBOOK
AND/OR INSTRUCTOR'S GUIDE AND TEACHING
TECHNIQUES MOST EFFECTIVE FOR THIS PHASE.
TO BE COMPILED AT END OF TEXT AND SENT TO JRC

CHAPTER II - OPERATIONAL MAJOR COMMANDS

This chapter covers the missions and operations of the Strategic Air Command (SAC), the Tactical Air Command (TAC), Pacific Air Forces (PACAF), and United States Air Forces in Europe (USAFE). After a discussion of the SAC mission and organization, the chapter explains the operational concepts governing the employment of manned bombers and intercontinental ballistic missiles. It reviews the TAC mission, the major types of tactical air operations, and the relationships of forces responsible for such operations. Also included is a discussion of the resources used by SAC and TAC in the performance of their missions. The chapter concludes with brief discussions of Pacific Air Forces and United States Air Forces in Europe, two theater air commands that draw their tactical air strength from TAC.

1. OBJECTIVES:

   a. Traditional Objectives - Each student should:

      (1) Be familiar with the mission and organization of SAC, TAC, PACAF, and USAFE.

      (2) Know the operational concepts and capabilities of SAC and TAC.

      (3) Understand the roles of manned bombers and ICBMs as deterrent forces.

      (4) Understand the missions of tactical air forces and the five basic types of tactical air operations.

      (5) Be familiar with the aircraft and weapons employed by SAC and TAC.

   b. Behavioral Objectives - Each student should be able to:

      (1) Identify the mission and organization of the Strategic Air Command and the Tactical Air Command.

      (2) Compare the capabilities and limitations of manned bombers and ICBMs.

      (3) Explain the five basic types of operations performed by tactical air forces.

(4) Identify and describe the primary weapon systems used by strategic and tactical air forces.

(5) Describe the roles of Pacific Air Forces and United States Air Forces in Europe.

2. SUGGESTED OUTLINE:

a. Strategic Air Command

(1) Mission and objectives

(a) Mission: capability of conducting strategic air warfare on a global basis

(b) Objectives: deterrent force and, should deterrence fail, counterforce to assure destruction of aggressor nation and limit damage to the United States

(c) Specified command, directly responsive to the President and the Joint Chiefs of Staff

(2) Organization

(a) Headquarters and central command post at Offutt Air Force Base, Nebraska

(b) Subordinate commands--numbered air forces and divisions (wings basic units for employment of strategic air power)

(3) Preparedness

(a) Survivability (alert, dispersal, and hardening)

(b) Training (proficiency, operational, and inspection)

(4) Employment in war

(a) Target planning by interservice staff (JSTPS)

(b) Command and control (communications and computer networks; interlocking launch systems)

(c) Tactics (penetration of enemy defenses; defense deception and suppression weapons)

(d) Conventional support (strategic umbrella; contingency operations)

(5) Resources

(a) Manned aircraft (B-52, FB-111, B-1, KC-135, SR-71)

(b) Air-launched missiles (Quail, Hound Dog, SRAM)

(c) Intercontinental ballistic missiles (Titan II, Minuteman II, and Minuteman III with MIRV capability)

b. Tactical Air Command

(1) Mission

(a) Preparation and supply of tactical air units to overseas commands in coordination with other air, land, or sea forces

(b) In general war, deployment of tactical units to augment PACAF and USAFE and to reinforce the Aerospace Defense Command in defense of the United States

(c) In less than general war, deployment of mobile strike forces to threatened areas

(2) Organization

(a) Headquarters at Langley Air Force Base, Virginia

(b) Three numbered air forces: Twelfth Air Force, Ninth Air Force, and Nineteenth Air Force

(c) Special Operations Force

(d) Various schools and technical centers that operate independently of numbered air forces

(3) Tactical air operations

(a) Counterair operations to gain air superiority by destroying enemy weapon systems before they can become airborne

(b) Interdiction to deny use of communications and supply routes to the enemy

(c) Close air support to assist ground forces in immediate battle area

(d) Tactical air reconnaissance to acquire information for use in military operations

(e) Tactical airlift of combat forces and materiel into and from battle areas (logistical airlift, airborne operations, aeromedical evacuation, and special air support operations)

(f) Operation of tactical air control system

(4) Tactical aircraft

(a) Fighter aircraft: F-100 Supersabre, F-105 Thunderchief, F-4 Phantom II, F-111, and F-15 Eagle

(b) Attack aircraft: A-7D Corsair

(c) Special operations aircraft: T-28 Trojan, A-1E Skyraider, A-37, AC-47 Skytrain, AC-130, AC-119K, O-2, OV-10, and U-10

(d) Reconnaissance and observation aircraft: RF-4C Phantom, RF-101C Voodoo, OV-10 Bronco, EB-66, and AQM-34

(e) Tactical airlift aircraft: C-130 Hercules, C-7A Caribou, and C-123 Provider

(5) Weapons and armament

(a) M-61 Vulcan ("Gatling gun")

(b) Air-to-air weapons: AIM-4D Falcon, AIM-7E Sparrow, AIM-9/BE Sidewinder

(c) Air-to-ground weapons: AGM-65/A Maverick, AGM-45 Shrike, and AGM-78

(6) US Readiness Command (formerly Strike Command)

(a) Headquarters at MacDill Air Force Base, Florida

(b) A unified command established to exercise control over general purpose forces

c. Pacific Air Forces (PACAF)

(1) Air component of unified Pacific Command

(2) Responsible for aerospace operations extending from Southeast Asia to Northeast Asia, the Indian Ocean, the Bering Sea, and the Pacific Ocean

(3) Headquarters at Hickam Air Force Base, Hawaii

(4) Organization: two numbered air forces, a support activities group, and an air division

d. United States Air Forces in Europe (USAFE)

(1) Air component of unified European Command

(2) Headquarters at Ramstein Air Force Base, Germany

(3) Organization: three numbered air forces

(4) Predominantly F-4 Phantoms and F-111s.

3. ORIENTATION:

a. This chapter introduces the student to the concept of major combat commands established according to specific functions. This is the student's first study of a command from the standpoint of mission, objectives, organization, and employment principles. By this time, the student probably has a rather broad understanding of aircraft and weapons. However, this chapter emphasizes the employment of these weapon systems and the organization necessary for command and control.

b. Since SAC and TAC are included in sequence, the instructor has an excellent opportunity to distinguish between the concepts of specified and unified commands. SAC is a specified command devoted solely to the deterrence mission. TAC plays a major role in providing combat-ready general purpose forces for the Air Force. It also serves as the air component of the US Readiness Command, which is a unified command consisting of the combined combat forces of the US Army Forces Command (formerly CONARC) and the Tactical Air Command. Similarly, PACAF and USAFE serve as air components of the unified Pacific Command and the European Command, respectively.

c. As a follow-up to this study of interservice teamwork, the instructor may wish to alter his sequence in studying the remaining chapters of this text and consider Chapter V next, concerning the roles of the Army and Navy aerospace forces.

4. SUGGESTED KEY POINTS:

a. The major part of US strategic offensive power is vested in the Strategic Air Command. (Chapter V has a discussion of the Navy's strategic forces.)

b. The SAC mission is to deter nuclear war by maintaining forces capable of conducting strategic warfare on a global basis. As a deterrent force, SAC maintains a mixture of combat aircraft and missiles capable of immediate operations against an aggressor. A vital element of deterrence is sufficiency of forces capable of destroying an aggressor nation and limiting damage to the United States. To insure this sufficiency of forces, SAC maintains two elements of the Triad. SAC also provides a number of options below the level of general war.

V-9125
pp 429-500

c. As a specified command, SAC is not under the operational command of the Air Force; it is directly responsive to the President and the Joint Chiefs of Staff. Operationally, only the SAC Commander in Chief at Offutt AFB, Nebraska, has the authority to launch, divert, or recall the strike force, and only the President has the authority to direct nuclear strikes. However, preparation of the SAC force for combat is decentralized to the wing level. The basic unit for the employment of strategic air power is the SAC wing. Various types of wings maintain combat readiness through a state of continuous alert.

d. Survivability and training are two important elements of SAC's preparation for all contingencies.

(1) Several measures insure the survivability of SAC forces; fast reaction capability (alert), dispersal to a number of bases, and hardening of missile sites.

(a) With the assistance of NORAD warning systems, SAC forces maintain around-the-clock ground alert to react within the warning time provided by BMEWS.

(b) Dispersal to a number of bases and missile sites reduces the vulnerability of the strike force. It also makes additional

runways available and permits SAC aircraft to become airborne in less time.

(c) Since missile launch activities cannot be moved easily from place to place, they must be protected through hardening (reinforcement), concealment, or other measures.

(2) Constant training is necessary to maintain combat readiness. Crews train as teams to operate and manage SAC weapon systems. Operational readiness inspections are conducted at regular intervals to insure SAC's ability to accomplish its mission.

e. Preparation for wartime employment of SAC forces includes target planning, command and control, tactics, and conventional support.

(1) A Joint Strategic Target Planning Staff (JSTPS) composed of representatives from the Air Force, Army, Navy, and Marine Corps prepares operational plans for various strategic actions during wartime. One division studies strategic target information and maintains a "target list." The other division develops a single integrated operational plan (SIOP) for US retaliatory strikes in a global war.

(2) Command and control capabilities enable SAC to launch its forces as soon as warning is received. The SAC communications network provides contact with aircraft in flight over all parts of the world. This insures that all units will fly to a positive control line well outside enemy territory. When they reach this point, they can proceed no further unless they receive voice instructions to strike their targets. Only the President can authorize them to proceed beyond this control point. The network also provides direct contact to all missile launch control centers.

(3) Tactics have been developed to insure penetration of an enemy's air and missile defenses. They are designed to limit destruction of US forces and insure maximum destruction of enemy targets. The attack plan seeks to reduce the effectiveness of enemy electronic defense through deception, pre-arrival attacks, and electronic countermeasures. These measures include evasive maneuvers, decoys, jamming techniques, and chaff.

(4) SAC also provides conventional support in smaller conflicts through its deterrent effect and rapid deployment capabilities.

f. SAC resources

(1) Manned aircraft

* V-9025 pp 109-112
** V-9076 pp 201-202

(a) B-52 Stratofortress is the current mainstay of SAC's manned bomber force. Although it was built to deliver SAC's nuclear firepower, it proved its flexibility in conventional bombing missions in Southeast Asia.

** V-9076 p 240

(b) The FB-111 augments the aging B-52. It can take off faster, fly faster and lower, and land on a shorter runway than the B-52.

(c) For the future, the B-1 is scheduled to replace the B-52. This bomber will be two-thirds as large as the B-52, but it will carry a heavier payload, fly at speeds above mach 2, and penetrate enemy defenses more effectively. Swing-wing design will enable it to fly efficiently at high and low altitudes, use shorter runways, and respond more rapidly than the B-52.

* V-9025 pp 109-112
** V-9076 p 202

(d) The KC-135 Stratotanker extends the range of SAC's bomber force. It is also used to refuel aircraft of other commands, such as tactical fighters in Vietnam.

** V-9076 p 261

(e) The SR-71 is a mach 3 high altitude strategic reconnaissance aircraft capable of surveying 60,000 square miles of the earth's surface during each hour of flight.

(2) Released bombs are the mainstays of manned bomber weapon systems, but the following air-launched missiles are also included:

(a) The Hound Dog is an air-breathing, supersonic air-to-ground missile with a 500-mile range. It can approach a target from either a high or low altitude and is not vulnerable to jamming by enemy countermeasures.

(b) SRAM is a short range attack missile under development. It is extremely accurate and can be carried in greater quantities than the Hound Dog. It also is not vulnerable to enemy interception or countermeasures, and it can be programmed for a number of flight paths. It can be carried on the B-52, FB-111, and the B-1.

(c) Quail is a decoy missile used against an enemy's electronic defenses. Although it is only 13 feet long, it produces a radar image similar to that of the B-52.

(3) SAC controls all of the nation's ICBMs.

(a) Titan II is the largest and most powerful ICBM employed by the United States. It has an in-silo launch capability and liquid-storable propellants.

(b) Minuteman II and III are the mainstays of SAC's ICBM force. They can be launched within 30 seconds and MM III is capable of deploying multiple independently-targeted reentry vehicles (MIRV's).

g. The Tactical Air Command provides combat-ready general purpose forces for the Air Force and serves as the air component of the US Readiness Command, a unified command that includes the combined forces of the US Army Forces Command and the Tactical Air Command. The TAC mission is to prepare tactical air units for deployment to overseas commands. It also organizes and trains personnel for assignment to unified commands requiring tactical air capabilities. One of the most significant characteristics of the unified command system is flexibility to permit rapid buildup or reduction of forces anywhere in the world.

h. The TAC organization consists of headquarters at Langley Air Force Base, Virginia, three numbered air forces, a Special Operations Force, and a number of schools and technical centers.

(1) The numbered air forces are the Ninth, Twelfth, and Nineteenth Air Forces. The Ninth and Twelfth Air Forces operate in geographic regions divided by the Mississippi River. Both of these air

forces prepare tactical units for deployment anywhere in the world. Bases used by these air forces support training schools and combat units of the US Air Force Readiness Command. The Nineteenth Air Force provides a highly mobile command element that can assume operational control of task forces, such as a composite air strike force (CASF) for overseas movement.

(2) The Special Operations Force specializes in counterinsurgency, unconventional warfare, guerrilla warfare, military civic action, and psychological operations.

(3) Certain TAC organizations operate independently of the numbered air forces and serve as doctrinal or technical centers. These organizations include the Air-Ground Operations School, the Tactical Air Warfare Center, the Special Operations Force, and the Tactical Fighter Weapons Center.

i. Tactical forces are responsible for attacking enemy forces in the field. Tactical air operations are directed against enemy forces or against targets closely related to the support of these forces in action. Tactical air forces perform five basic tasks: counterair operations, interdiction, close air support, tactical air reconnaissance, and tactical airlift.

* V-9050 pp 150-161

(1) Counterair operations are conducted to gain air superiority. These operations include attacking and destroying enemy aircraft and missiles before they become airborne and air-to-air combat with enemy forces if they are already airborne. This concept includes both air defense and interceptor operations.

(2) The purpose of interdiction is to deny the enemy the use of communications and supply routes using air strikes behind his lines. One of the Air Force's primary missions in Southeast Asia was interdiction operations on the Ho Chi Minh Trail to prevent the movement of enemy supplies, equipment, and men into South Vietnam.

(3) The objective of close air support is to assist ground forces in an immediate battle area by delivering aerial firepower against enemy surface positions. Close air support requires coordination with ground forces and supplements the firepower

of ground forces. Tactical close air support is best employed when ground forces are either advancing or retreating.

(4) Tactical air reconnaissance is the oldest of the military air missions, predating the airplane itself. It is the basic source of information used in unified or joint military operations.

(5) Tactical airlift supplements strategic airlift (discussed in Chapter III) by moving forces within a theater and bringing logistic support to an immediate battle area. Tactical airlift transports airborne troops, lands and/or air-drops supplies, supports special operations, and conducts aeromedical evacuation.

(6) Performance of these tasks is coordinated through a network of electronically-equipped nerve centers known as the Tactical Air Control System (TACS). The system extends from ground radar communications posts and forward air controllers in light airplanes back through such intermediate centers as the Direct Air Support Center (DASC) to a Tactical Air Control Center (TACC).

j. The diversity of tactical air operations requires a wide variety of aircraft and weapons. Tactical air forces use fighter and attack aircraft in counterair, interdiction, and close air support roles. Fighter aircraft are capable of air-to-surface strikes and air-to-air combat. Attack aircraft are designed primarily for use against ground targets. The Special Operations Force uses a wide range of propeller-driven, light jet, and helicopter aircraft for specialized air missions. Reconnaissance and observation aircraft are adapted for specific types of operations. Reconnaissance aircraft are equipped with photographic and sensing devices, and observation aircraft are designed for visual observation. Tactical airlift aircraft include medium and light transports of varying sizes and performance characteristics. Various aircraft used by TAC are briefly listed and/or described below:

(1) Fighter aircraft include the F-100 Supersabre (ANG), F-105 Thunderchief, F-4 Phantom II, F-111, and the F-15 Eagle.

(2) The newest attack aircraft in the TAC inventory is the A-7D Corsair II designed especially for close air support operations.

* V-9067 entire

** V-9076 pp 21, 212, 226, 231, 237, 240, 249, 258, 262, 267-268, 274, 276, 292-293

(3) Aircraft used for special operations include the T-28 Trojan, A-1E Skyraider, A-37, and the AC-47 Skytrain. These aircraft are adapted for counter-insurgency operations because they can operate from small, unimproved landing fields, and they can fly "low and slow." The AC-130 and AC-47 gunships represent new concepts in close air and interdiction operations. The newest member of the gunship fleet is the AC-119K. Other special operations aircraft include the U-10, O-2, and OV-10.

(4) Primary reconnaissance aircraft are the RF-4C Phantom and the RF-101C Voodoo. The OV-10 Bronco is currently used for special operations reconnaissance. The EB-66 and the AQM-34 are electronic support aircraft used for detecting and identifying enemy electronic countermeasures.

(5) The backbone of the tactical airlift fleet is the C-130 Hercules. For smaller loads delivered to short airstrips, the C-7a Caribou and the C-123 Provider are used.

k. Weapons and armament used in tactical air combat include a variety of guns, bombs, and air-launched missiles. Worthy of special mention is the M-61 multi-barreled Vulcan cannon or "Gatling gun" capable of firing 6,000 20mm rounds per minute. Air-launched missiles include the following:

(1) The 130-pound AIM-4D Falcon--a modified version of the heat-seeking missiles used by ADC.

(2) AIM-7# Sparrow--a 400-pound radar-guided missile that homes on the radar of enemy aircraft.

(3) AIM-9/BE Sidewinder--a 160-pound heat-seeking missile.

(4) ACM-65/A Maverick--a 500-pound TV-guided missile used against armored vehicles and bunkers.

(5) AGM-45 Shrike--equipped with a radar-homing system for use in standoff attacks against missile and antiaircraft sites.

(6) AGM-78--used for the same functions as the Shrike but has a greater payload, range, and flexibility than the Shrike.

l. The US Readiness Command (formerly Strike Command) is the newest unified command. Its mission is to provide a reserve of combat-ready general purpose forces based in the United States to reinforce unified commands overseas.

m. PACAF is the air component of the unified Pacific Command. PACAF's area of responsibility includes Southeast Asia, Northeast Asia, the Indian Ocean, the Bering Sea, and the entire Pacific Ocean. This area includes one-third of the world's population living under the flags of 35 different countries.

n. USAFE is the air component of the unified European Command. USAFE is predominantly a Phantom and F-111 tactical air force assigned as a deterrent force in NATO.

5. SUGGESTIONS FOR TEACHING:

a. Suggested time: 4-6-8

b. Be sure to keep class current on new developments in tactical aircraft. The matter of STOL (short takeoff and landing), VTOL (vertical takeoff and landing), and V/STOL (one aircraft with both capabilities) is especially pertinent to tactical aircraft, both combat and airlift. Even its applications to civil aviation are worthy of discussion if the discussion is kept subordinate to main chapter objectives.

c. The development of the F-15 as an air superiority fighter may indicate a new trend toward specialization in tactical combat aircraft. Current fighters like the F-4 and the F-111 were designed for versatility in both air-to-air and air-to-surface combat; now the feeling seems to be that the next generation of tactical aircraft should have different aircraft designed for the ground-attack and air-to-air combat tasks. Follow the evaluation of the YF-16 and YF-17.

d. Special operations and counterinsurgency may need more emphasis than they receive in the text. Besides Vietnam, the military civic action projects in Latin America, with the assistance of the US Southern Command and the Air Force Southern Command, are of interest.

e. Grab Bag--Have class teams attempt to knock out the Triad. Have a role play of CINCSAC and CINCTAC discussing their jobs and missions. Simulate a discussion between SAC and TAC pilots over their importance to national security. Conduct a debate between teams representing SAC flying crews and SAC missilemen.

6. INSTRUCTIONAL AIDS:

a. Films

(1) SFP 1246a Air Power in Counterinsurgency--Incipient Insurgency, 21 min, color, 1966.

(2) SFP 1246b Air Power in Counterinsurgency--Active Insurgency, 25 min, color, 1966.

(3) SFP 1327 Tactical Air Reconnaissance, 20 min, color, 1966.

(4) SFP 1597 Tactical Air Power, 20 min, color, 1967.

(5) SFP 1767 There Is A Way (revised), 27 min, color, 1967.

(6) SFP 1795 The SAC Command Post, 17 min, color, 1970.

(7) SFP 1796 About Our Missiles, 15 min, color, 1970.

(8) SFP 1797 Indispensables, the KC-135 Air Refueling, 20 min, color, 1970.

(9) SFP 2052 The Way It Is--The Tactical Airlift Story, 26 min, B&W, 1968.

(10) TF 6554 The Army/Air Force Team in Action, 28 min, color, 1970.

b. Slides

(1) V-0073 (124 slides) Tactical Air Command

(2) V-0077 (40 slides) Strategic Air Command

7. PROJECTS:

a. It may be advisable to take the focus away from Vietnam. Civic action in areas such as Latin America provides material for oral or written reports. In the field of aircraft development, several projects are of interest. The lightweight fighter Prototype program (YF-6 and YF-17) is one. The AMST (advanced medium STOL transport), follow-on of the C-130 with higher performance plus STOL capability, is another good report topic. The civil aviation potential of such an aircraft can be included in the discussion.

b. Grab Bag--Have students draw up maps showing SAC or TAC bases and listing the mission and/or equipment for each. Give a report on Looking Glass. Simulate an ORI or determine critical areas for inspection. Write up a comparison of the F-14 and the F-15.

8. FURTHER READING:

a. AFROTC, A Quarter Century of Air Power, Maxwell AFB, Al, Air University, 1973.

b. "Air Force Magazine" Annual Air Force Almanac issue.

c. Jane's All the World's Aircraft, latest edition, New York: McGraw-Hill.

d. Aerospace Industries Assn. of America, Inc., The Aerospace Year Book, latest edition, Washington, DC: Spartan Books.

e. Harvey, Frank, Strike Command, New York: Duell, Sloan & Pearce, 1962.

f. Colby, C.B., Jets of the World, New York: Coward-McMann, Inc., 1966.

g. Glines, Carroll V., Modern U.S. Air Force, Van Nostrand, 1963.

h. Goodie, C.B., Strategic Air Command, New York: Simon & Schuster, 1965.

i. MacCoskey, Monro, Brig. Gen., The United States Air Force, New York: Frederick A. Praeger, 1967.

j. Borklund, C.W., The Department of Defense, New York: Frederick A. Praeger, 1967.

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CHAPTER III - OPERATIONAL MAJOR COMMANDS: ADC, MAC, AAC, USAFSO

This chapter covers the strategic defense mission of the Aerospace Defense Command (ADC) and the global airlift and various technical service missions of the Military Airlift Command (MAC). It also includes a brief discussion of the Alaskan Air Command (AAC) and the US Air Forces Southern Command (USAFSO).

1. OBJECTIVES:

   a. Traditional Objectives - Each student should:

      (1) Be familiar with the organization of NORAD, CONAD, and ADC.

      (2) Know the role and mission of ADC.

      (3) Be familiar with ADC weapons and operations.

      (4) Be familiar with the MAC global airlift organization and operations and know its role and mission.

      (5) Know the technical services provided by MAC.

      (6) Be familiar with the roles and missions of AAC and USAFSO.

   b. Behavioral Objectives - Each student should be able to:

      (1) Outline the organization and operation of the continental defense system.

      (2) List and describe the major detection and weapon systems used by ADC.

      (3) Discuss MAC's global airlift activities and the aircraft used.

      (4) Describe the technical services provided by MAC.

      (5) Define the roles of the AAC and the USAFSO in the defense of the Western Hemisphere.

2. SUGGESTED OUTLINE:

   a. North American aerospace defense--NORAD, CONAD, and ADC

      (1) NORAD--A United States/Canadian organization responsible for defense of the North American continent

(2) CONAD--A unified command that includes all US forces in NORAD

(3) Component (providing) commands

(a) ADC--USAF component of NORAD

(b) US Army Air Defense Command--US Army component

(c) Canadian Forces Air Defense Command--Canadian component

b. Role and mission of aerospace defense

(1) Deterrence through in-being strategic defensive forces

(2) Protection of population, industrial, and Government centers

c. ADC weapons and operations

(1) Command and control

(a) Combat Operations Center (NORAD headquarters)

(b) Semi-Automatic Ground Environment (SAGE) System

(c) Back-Up Interceptor Control (BUIC)

(d) Airborne Warning and Control System (AWACS)

(2) Defense against manned bombers

(a) Detection--DEW line across north polar regions and continuous radar from Alaska across southern Canada and much of the United States

(b) Identification--ADIZ, flight plan correlation, and transponders

(c) Interception and destruction--aircraft, air-to-air missiles, and surface-to-air missiles: F-102A (ANG), F-101B (ANG), F-106A, Falcon missiles (AIM-26B, AIM-4A, 4C, 4D, 4F, and 4G), AIR-2A Genie, Nike-Hercules, and Hawk

(3) Defense against missiles and space weapons

(a) Detection of ICBMs: ballistic missile early warning system (BMEWS) and 440-L Over-the-Horizon (OTH) radar

(b) Detection of sea-launched missiles and orbiting satellites: sea-launched ballistic missile (SLBM) detection and warning network, Space Defense System, and Space Detection and Tracking System

(c) Interception and destruction: Safeguard system (Spartan and Sprint missiles) and Satellite Intercept System (Thor missile)

d. Military Airlift Command

(1) Organization and resources

(a) Numbered air forces: 21st Air Force and 22nd Air Force

(b) Specialized wings: 89th Military Airlift Wing, 443rd Military Airlift Wing (Training), and 375th Aeromedical Airlift Wing

(c) Air Reserve forces

(d) Civil Reserve Air Fleet (CRAF)

(e) Base Engineer Emergency Force (Prime BEEF)

(2) MAC operations

(a) Command and control: Headquarters MAC Command Post, communications network (AUTODIN and AUTOVON), and Airlift Control Element (ALCE)

(b) Strategic airlift operations

(c) The airlift fleet: C-141 Starlifter, C-5 Galaxy, and C-9 Nightingale

(3) MAC technical services

(a) Aerospace Rescue and Recovery Service (ARRS)

(b) Air Weather Service (AWS)

(c) Aerospace Audio-Visual Service (AAVS)

e. Alaskan Air Command

(1) Air Force component of unified Alaskan Command

(2) Two main operating bases in Alaska

(a) Eielson Air Force Base (Fairbanks)

(b) Elmendorf Air Force Base, Headquarters AAC (Anchorage)

(3) Forward operating bases

(a) King Salmon

(b) Galena

(4) Additional missions

f. US Air Forces Southern Command

(1) Air Force component of US Southern Command

(2) Geographic area of responsibility second in size only to PACAF

(3) Mission

(a) Promote security and solidarity of the Western Hemisphere

(b) Air defense of Panama Canal Zone

(c) Technical assistance to Latin American countries

(d) Civic action programs and humanitarian services

(4) Contributions

3. ORIENTATION:

a. In the preceding chapter, the student was introduced to the concept of deterrence and the role of strategic offensive forces maintained by the Strategic Air Command. Emphasis in the first part of this chapter should be given to the complementing role of ADC's strategic defensive forces. Even though the text devotes a great deal of attention to ADC weapons and operations, the student should understand the relationship of aerospace defense to deterrence, particularly in limiting damage from enemy attack if deterrence fails.

b. In studying the Military Airlift Command, the student should understand and appreciate the scope and diversity of MAC's global airlift activities. If possible, the instructor should outline some of the problems of managing the global airlift force. Additionally, the student should understand the difference between MAC's strategic airlift responsibilities and the tactical airlift operations described in the preceding chapter.

c. The closing pages of the chapter are intended only as a brief look at two important operational commands.

4. SUGGESTED KEY POINTS:

a. Strategic defense is primarily a reference to the forces that protect the North American continent from an enemy aerospace attack. Maintaining and operating strategic defense systems are the responsibilities of the North American Air Defense Command (NORAD), the Continental Air Defense Command (CONAD), and their component commands, including the Aerospace Defense Command (ADC).

(1) NORAD is a two-nation, all-service command responsible for the aerospace defense of the North American continent. NORAD controls an air defense system that encompasses the North American continent from the polar ice caps to the Mexican border and from east to west beyond the continental borders. The NORAD commander reports directly to the US Joint Chiefs of Staff and to the Canadian Chief of the Defense Staff.

(2) CONAD is a unified command that includes all US forces in NORAD. The CONAD commander is the senior US officer in NORAD. (Currently, this officer is also the commander of NORAD.)

(3) Both Air Force and Army units of the United States and Canada serve in the NORAD system. Because of its specialized capabilities in aerospace, however, ADC, the Air Force component, is the most significant member of NORAD. ADC operates and maintains all NORAD detection, warning, and control centers and most of the NORAD weapon systems. The US Army Air Defense Command is a major component command that contributes Nike-Hercules and Hawk missiles to the NORAD system. Another component command is the Canadian Forces Air Defense Command.

b. The nation's military forces have two fundamental tasks: to deter military aggression against the United States and, if deterrence fails, to wage warfare successfully and limit damage to the United States. Critical elements of the deterrence concept are the nation's overall strength, its willingness to use its strength against an aggressor, and the attitude of potential enemies toward this strength. Strong defensive forces are vital elements in deterrence because they reduce the element of surprise, force an enemy to doubt his offensive capability, and demonstrate the nation's will and ability to defend itself. The defense system provides security in three areas: tactical warning, passive defense, and active defense.

c. The aerospace defense system is a vast network of interconnecting command posts, operating centers, and weapon systems. This system includes forces for command and control, defense against manned bombers, and defense against missiles and space weapons.

(1) Command and control is exercised through a Combat Operations Center (COC), Semi-Automatic Ground Environment (SAGE) System, Back-Up Interceptor Control (BUIC), and Airborne Warning and Control System (AWACS).

(a) The COC controls NORAD's manned bomber defense system and the space detection and tracking system and receives inputs from all parts of the NORAD detection and warning system.

(b) SAGE direction centers receive all information necessary for making decisions in controlling and directing the defense system. After decisions are made, these centers can then use the defense weapon system to defend against an enemy attack.

(c) BUIC sites on standby status provide alternate direction centers in the event that SAGE centers are destroyed.

(d) AWACS, under development, is a vital part of the ADC modernization effort. When completed, AWACS will be the airborne equivalent of SAGE and BUIC centers, and it will add the survivability, mobility, and range of an airborne platform. It will not be necessary for

AWACS to remain in the air at all times because it will offer the option of activation by another element of ADC's modernization plans--an over-the-horizon backscatter radar (OTH-B).

d. Defense against manned bombers includes four basic functions: detection, identification, interception, and destruction.

(1) The Distant Early Warning (DEW) line and an overlapping system of land and airborne radar installations are the major parts of the system for detecting manned bombers. The DEW line extends from the Aleutian Islands across North America to Greenland. Additionally, an area of continuous radar spans the approaches to southern Canada. This system blankets Alaska, southern Canada, and much of the United States.

(2) After detecting an object, NORAD must then determine whether the object is friendly or hostile. It devotes major attention to military and civilian aircraft that cross continental perimeters or national borders. These areas are designated as air defense identification zones (ADIZ). To enter these zones, a pilot must previously file a flight plan indicating his route and time and point of entry. Any aircraft not flying according to an approved flight plan is subject to inspection by an armed interceptor. Another method of identification includes the use of electronic devices known as transponders. In addition, fixed sensing devices at strategic locations are capable of instantly reporting a nuclear explosion to the NORAD COC.

(3) The interception and, if necessary, destruction functions begin when an object has been identified as a hostile aircraft. ADC manned weapon systems available to NORAD include interceptor aircraft and their air-to-air weapons. The ADC inventory of interceptor aircraft and weapons includes the supersonic F-102A equipped with data-link communications system and armed with Falcon missiles and the F-101B armed with the AIM-4D missile and the AIR-2A rocket. Both aircraft are flown by the ANG. The most advanced interceptor is the F-106 Delta Dart with a speed over mach 2 and a highly

* V-9076 pp 218-219, 267

automated data-link system for ground control all the way to the point of intercept. It is armed with Falcon missiles and the AIR-2A nuclear rocket.

(4) In addition to airborne intercept missiles, surface-to-air missiles can be used to defend against manned bombers. The Nike-Hercules has a range of 75 miles and has reached altitudes over 100,000 feet. It has destroyed drone targets flying at more than three times the speed of sound. The Hawk is a radar-homing weapon designed to intercept and destroy low-flying aircraft attempting to escape radar surveillance.

** V-9136 pp 132-133, 185

e. The nation's defenses against missiles and space weapons are incomplete. ADC has an effective detection and surveillance system, but it does not have a complete weapon system. Two ADC missile detection systems are the ballistic missile early warning system (BMEWS) and the 440-L Over-the-Horizon (OTH) radar. BMEWS consists of giant radar installations capable of detecting an ICBM over the north polar regions. If the missile heads into orbit or outer space, the ADC Space Defense System takes over surveillance of the missile. The OTH radar system reflects radar beams off the ionosphere and, therefore, can detect missiles far beyond the horizon within minutes of launch. BMEWS alone provides warning time of 15 minutes, but, with the addition of the OTH radar capability, warning time has been extended to 30 minutes. ADC also maintains a sea-launched ballistic missile (SLBM) detection and warning network to detect ballistic missiles launched from submarines toward the North American continent.

f. NORAD's Space Defense System detects and tracks orbiting satellites. This system includes the Space Defense Center, the Space Detection and Tracking System, and the Satellite Intercept System. The Space Detection and Tracking System receives information from four primary sources: the US Air Force Spacetrack System, BMEWS, the US Navy Space Surveillance System, and the Canadian Armed Forces Air Defense Command Satellite Tracking Unit. The primary detection and warning network is the Spacetrack system.

g. Currently, the United States has only a limited ability to intercept and destroy missiles and space weapons. In 1969, Congress authorized emplacement

of the Safeguard antiballistic missile (ABM) system consisting of the Spartan and Sprint missiles. Also, a Satellite Intercept System employs the Thor missile to intercept and destroy a satellite considered a threat to national security.

h. The Military Airlift Command (MAC) is considered an operational rather than support command, but, in both its airlift and technical services, MAC supports other Air Force commands and other military services. MAC's history of global airlift and technical services dates back to the pre-World War II period.

(1) In World War II, the Ferry Command and, after mid-1942, the Air Transport Command established a global network of airways and served all theaters with transoceanic flights. Flights over the "Hump" from India to China are famous episodes in military airlift history.

(2) In 1948, the interservice, predominantly Air Force, Military Air Transport Service (MATS) was established. The Berlin Airlift, Korea, Vietnam, and global service from Antarctica to Thule have been important parts of MATS and MAC history.

(3) MAC's technical services of today are not the same as the original technical services of the airlift command. For example, Air Force Communications Service was formerly a part of ATC and MATS. AFCS is now a major command.

i. The airlift provided by MAC should be distinguished from the tactical or intratheater airlift discussed in the preceding chapter. MAC provides mainly transoceanic airlift between the United States and overseas theaters. Tactical airlift, on the other hand, operates within a theater of action from port of debarkation to battlefront. All MAC activities are directed from headquarters at Scott AFB, Illinois. MAC's major airlift effort is conducted through two numbered air forces. With headquarters at McGuire AFB, New Jersey, the 21st Air Force conducts airlift operations throughout the North Atlantic, Europe, Africa, and South America. With headquarters at Travis AFB, California, the 22nd Air Force conducts airlift operations in the Pacific and Far East. In the United States, the Mississippi River is the dividing line between these two air forces' areas of responsibility. The 90th meridian east separates their areas

of responsibility near Calcutta, India. Special airlift organizations include a "special missions" wing, an airlift training wing, and an aeromedical airlift wing.

j. MAC provides overseas airlift services and maintains an ability to perform tactical airlift functions. Routine airlift services are augmented by Air Force Reserve units and commercial airliners of the Civil Reserve Airlift Fleet (CRAF).

k. The Headquarters MAC Command Post at Scott AFB exercises overall command and control of MAC's global airlift force. A network of base-level command posts and a communications network consisting of AUTODIN and AUTOVON terminals enable MAC to respond to emergency requirements in a minimum of time. Another element of MAC's capability is the Airlift Control Element (ALCE), a team of highly skilled personnel who can be flown on short notice to any area in the world.

l. MAC's primary mission is the strategic airlift of combat forces and their equipment anywhere in the world. For example, MAC used C-141s to deliver troops, patients, cargo, and mail in 1965 during the buildup of US forces in Southeast Asia. In 1967, it undertook the largest and longest military airlift ever attempted into a combat zone. In addition to its combat mission, the MAC airlift force engages in readiness exercises of various sorts and frequently performs global humanitarian missions.

* V-9036 pp 410-418

m. The trend in MAC is to replace older propeller-driven aircraft with larger and faster jet aircraft. The C-141 Starlifter and the C-5 Galaxy complement each other in capabilities and were designed for different roles or parts of the airlift mission. The C-118 Liftmaster and the C-131 Samaritan have been replaced by the C-9 Nightingale, a twin-jet Flying Hospital that contains specially designed equipment for complete airborne medical care.

n. Technical services performed by MAC are assigned to three subordinate organizations: the Aerospace Rescue and Recovery Service (ARRS), the Air Weather Service (AWS), and the Aerospace Audio-Visual Service (ARVS).

(1) ARRS provides global rescue service to the Air Force, other military services, and certain civilian activities (MAST). It also provides a variety of rescue services not directly related to the military mission. Among the most famous ARRS personnel are the men who flew the Jolly Green Giant rescue helicopters in Vietnam. ARRS has become increasingly involved in space age activities.

(2) AWS, the largest of the MAC technical services, provides specialized weather services to the Air Force, the Army, and civilian weather bureaus in the United States and other countries. It's personnel are trained to provide weather services tailored to the needs of each command, including special meteorological research in support of the Air Force Systems Command. AWS uses the WC-135 and WC-130 aircraft to perform its weather reconnaissance and air sampling missions and the WU-2 and WB-57F aircraft to perform its high-altitude radiation sampling mission.

(3) AAVS provides a worldwide photo and motion picture service from "over-the-target" combat photography to training and orientation films.

o. The Alaskan Air Command (AAC) is the Air Force component of the unified Alaskan Command, and it is the air arm of defense for the northernmost approaches to the continental United States. AAC operates from two main bases in Alaska--Eielson AFB near Fairbanks and Elmendorf AFB, Headquarters AAC, near Anchorage. Forward operating bases at King Salmon and Galena serve as command and control centers for air defense interceptors. Other AAC missions include search and rescue, airlift, and support operations in Greenland.

p. The US Air Forces Southern Command (USAFSO) has headquarters at Albrook AFB, Panama Canal Zone. USAFSO is the air component of the unified US Southern Command operated under the direction of the JCS. Its geographic area of responsibility is second in size only to that of PACAF. Its primary mission is the air defense of the Panama Canal Zone, but it also provides technical assistance to Latin American air forces and conducts various civic action programs.

5. SUGGESTIONS FOR TEACHING:

a. Suggested time: 3-5-6

b. As in Chapter 2, the instructor should attempt to keep the discussion of this phase current. For example, the ABM is still a debated issue. Information rather than indoctrination should be the goal.

c. Grab Bag--Debate the use of the C-5 vs the 747. Outline a C-5 and a Cessna 150 on a field to highlight the contrast in size. Have the students figure out how many cars will fit in a C-5 and a C-141. Have them develop a time line of the primary interceptors ADC has used over the years.

6. INSTRUCTIONAL AIDS:

a. Films

(1) AFMR645 NORAD, 10 min, B&W, 1965.

(2) FR981 Westward the Eagles (MAC Airlift to Vietnam), 25 min, color, 1968.

(3) SFP 1287 Eyes of the North, 21 min, color, 1966.

(4) SFP 1359 The Air Weather Service of the USAF, 14 min, color, 1966.

(5) SFP 1468 Wings Over the Americas, 24 min, color, 1969.

(6) SFP 1471 Tactical Weather Support, 23 min, color, 1966.

(7) SFP 1552 The Friendly Enemy, 30 min, color, 1965.

(8) SFP 1730 A Better Chance, 30 min, color, 1969.

(9) SFP 1754 The Weapons Controller--Key to Effective Air Defense, 22 min, color, 1968.

(10) SFP 1763 To Save a Soldier, 57 min, color, 1966.

(11) SFP 1956 Faces of Rescue, 24 min, color, 1971.

(12) SFP 2062 Lifeline, 24 min, color, 1969.

(13) SFP 2004 Inter-American Air Force Academy, 19 min, color, 1971.

b. Slides:

(1) V-0020 Evolution in Airlift, C-5A (13 slides)

(2) V-0075 Military Airlift Command, 1973 (27 slides)

(3) V-0078 Aerospace Defense Command (69 slides)

7. PROJECTS:

Topics for debate or individual reports: the manned bomber threat, the Soviet FOBS system, manned aircraft developments, the AWACS concept, satellite surveillance, the NORAD COC, and C-5 Galaxy. Have students prepare a briefing on the closest MAST operation. Have them develop an intercept profile or an Air Evac mission briefing.

8. FURTHER READING:

a. AFROTC, USAF, Present and Future, Maxwell AFB, Al, Air University, 1969.

b. "Air Force Magazine," Annual Air Force Almanac issue.

c. Witze, Claude, "The Fight Over the ABM: Debate or Witch-Hunt?" Air Force and Space Digest, April 1969, pp 34-38.

d. AFROTC, A Quarter Century of Air Power, Maxwell AFB, Al, Air University, 1973.

e. Glines, Carroll V., Jr., The Compact History of the U.S. Air Force, New York: Hawthorne Books, Inc.

f. Aerospace Industries Assn. of America, Inc., The Aerospace Year Book, latest edition, Washington, DC: Spartan Books.

g. Glines, Carroll V., Modern U.S. Air Force, Van Nostrand, 1963.

h. MacCoskey, Monro, Brig. Gen., The United States Air Force, New York: Frederick A. Praeger, 1967.

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CHAPTER IV - SUPPORT MAJOR COMMANDS AND SEPARATE OPERATING AGENCIES

This chapter describes the missions and functions of the Air Force support commands and separate operating agencies. Major emphasis is given to the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC) and their roles in supporting the Air Force operational commands. The chapter also examines the roles of other major support commands in providing personnel, communications, education and training, security, accounting and finance, and other specialized services.

1. OBJECTIVES:

   a. Traditional Objectives - Each student should:

      (1) Understand the need for support commands and agencies and their relationship with Air Force operational commands.

      (2) Know the role and functions of the Air Force Systems Command.

      (3) Know how logistics management affects the ability of the Air Force to accomplish its mission.

      (4) Know the services provided by other major support commands and operating agencies.

   b. Behavioral Objectives - Each student should be able to:

      (1) Explain the relationship between support commands and operating commands.

      (2) Describe the role of the Air Force Systems Command.

      (3) Discuss the relationship between systems management and logistics management.

      (4) Describe the contributions of other Air Force commands and operating agencies.

2. SUGGESTED OUTLINE:

a. Air Force Systems Command

(1) Mission: research, development, testing, and procurement of new systems for the Air Force

(2) Organization: Headquarters at Andrews AFB, MD, product and research divisions, test and development centers, and two national ranges

(a) Space and Missiles Systems Organization (SAMSO) and Space and Missile Test Center (SAMTEC)

(b) Aeronautical Systems Division (ASD)

(c) Electronic Systems Division (ESD)

(d) Foreign Technology Division (FTD)

(e) Aerospace Medical Division (AMD)

(f) Air Force Contract Management Division (AFCMD)

(g) Air Force Eastern Test Range

(h) Arnold Engineering Development Center (AEDC)

(i) Air Force Flight Test Center (AFFTC)

(j) Armament Development and Test Center (ADTC)

(k) Air Force Special Weapons Center (AFSWC)

(l) Air Force Civil Engineering Center (AFCEC)

b. Air Force Logistics Command

(1) Mission and function

(a) Coordination with AFSC in development and procurement of systems

(b) Procurement, supply, and maintenance of systems and parts for Air Force operating commands

(2) Organization

(a) Headquarters at Wright-Patterson AFB, OH

(b) Air Materiel Areas (AMAs): Oklahoma City, Ogden, San Antonio, Sacramento, and Warner Robins

(c) Specialized activities: Aerospace Guidance and Metrology Center, Military Aircraft Storage Disposition Center, and Air Force Contract Maintenance Center

c. Air Force education and training

(1) Air University (AU)

(a) Professional schools

(b) Air Force Reserve Officers Training Corps (AFROTC)

(c) Air Force Institute of Technology (AFIT)

(d) Extension Course Institute (ECI)

(e) Other AU schools

(2) Air Training Command (ATC)

(a) Recruiting and Training

(b) Technical training

(c) Flight training

d. Additional support functions

(1) Air Force Communications Service (AFCS)

(2) US Air Force Security Service (USAFSS)

(3) Headquarters Command, USAF

(4) Separate operating agencies

(a) Air Force Academy (USAFA)

(b) Headquarters Air Force Reserve (AFRES)

(c) Air Reserve Personnel Center (ARPC)

(d) Air Force Accounting and Finance Center (AFAFC)

(e) Air Force Data Automation Agency (AFDAA)

(f) Air Force Military Personnel Center (AFMPC)

(g) Air Force Office of Special Investigations (AFOSI)

(h) Air Force Audit Agency (AFAA)

(i) Air Force Safety and Inspection Center (AFSIC)

(j) Air Force Intelligence Service (AFIS)

3. ORIENTATION:

This study of support commands and separate operating agencies concludes our review of aerospace forces maintained by the USAF. A major consideration for some high school students at this point is career motivation. Many jobs in various Air Force commands and agencies require skills in a number of scientific, technological, and managerial fields. Certain students may be interested in these career fields. Consideration of the logistic and financial needs of the Air Force may provide other students with a better understanding of what it takes to maintain a military establishment.

4. SUGGESTED KEY POINTS:

a. AFSC's mission is to advance aerospace technology. It is concerned with the acquisition and development of new aircraft, weapons, and other equipment for the Air Force. The organization consists of headquarters at Andrews AFB, MD; divisions for testing and procuring major systems and equipment; ranges for tracking ballistic missiles, space launch vehicles, and various space systems; and centers for testing and evaluating new systems.

(1) The Space and Missile Systems Organization (SAMSO) at Los Angeles, CA, is DOD's major development agency for space and ballistic missile programs.

(2) The Aeronautical Systems Division (ASD) at Wright-Patterson AFB, OH, develops new aircraft and related equipment. ASD has developed bombers, fighters, helicopters, vertical/short takeoff and landing aircraft (V/STOL), transports, trainers, reconnaissance aircraft, research aircraft, and nonballistic missiles. Examples are the F-111, C-5 Galaxy, B-1, F-15, and a variety of others.

(3) The Electronic Systems Division (ESD) at Lawrence G. Hanscom Field near Boston, MA, develops and tests all

electronic systems, including data processing and communications.

(4) The Foreign Technology Division (FTD) at Wright-Patterson AFB, OH, observes and reports on foreign technological developments.

(5) The Aerospace Medical Division (AMD) at Brooks AFB, TX, manages research programs in clinical and aerospace medicine and conducts specialized education programs for medical technicians. AMD has also been involved in the selection and training of astronauts.

(6) The Air Force Contract Management Division (AFCMD) at Kirtland AFB, NM, manages DOD contracts. It's job is to assist the government in monitoring production costs, meeting time schedules, and achieving products of high quality.

(7) AFSC test ranges provide facilities for launching, tracking, and evaluating missile, satellite, and manned space systems. The Eastern Test Range, with headquarters at Patrick AFB, FL, extends from Cape Kennedy through the Atlantic Ocean to the Indian Ocean. The Western Test Range, operated and maintained by the Space and Missile Test Center at Vandenberg AFB, CA, extends through the Pacific Ocean into the Indian Ocean where it meets the Eastern Test Range to form a single global tracking network.

(8) The Arnold Engineering Development Center at Arnold AFS, TN, operates the free world's largest complex of wind tunnels, high altitude jet and rocket engine test cells, space environmental chambers, and hyperballistic ranges.

(9) The Air Force Flight Test Center at Edwards AFB, CA, has a 15,000-foot man-made runway, natural runways, and an ideal climate for year round flight testing. This center is famous for the "X" series of advanced research aircraft that have been tested at its facilities.

(10) The Armament Development and Test Center at Eglin AFB, FL, is responsible for developing and testing conventional weapons and air-to-air and air-to-ground missile systems. It works closely with the Special Operations Force of the Tactical Air Command in testing munitions and other equipment used in special warfare.

(11) The Air Force Special Weapons Center at Kirtland AFB, NM, conducts atmospheric nuclear tests and provides air support for underground nuclear tests. It also tests the vulnerability of various types of equipment to nuclear shock.

b. AFLC is responsible for logistics management--the operation of the AF's vast programs of supply and maintenance. AFLC controls items in the Air Force inventory ranging from transistors the size of pinheads to radar screens the size of football fields. In coordination with AFSC, the Logistics Command provides logistics support and services for Air Force organizations, systems, and other activities. Both commands have responsibilities throughout the life cycle of a system. AFSC responsibilities include systems research and development, and AFLC responsibilities focus on storage and maintenance of systems after they become operational. AFLC functions range from determination of supply and equipment needs, through procurement, storage, distribution, maintenance, and modification, and on to disposal.

(1) Wright-Patterson AFB, OH, is the headquarters of the Air Force Logistics Command. AFLC conducts its global logistics support activities from five air materiel areas (AMAs). Basically, each AMA has a global responsibility for a specific weapon system assigned to it. AMAs are located at Tinken AFB, OK; Hill AFB, UT; Kelly AFB, TX; McClellan AFB, CA; and Robins AFB, GA. (See the text for specific missions of each AMA.)

(2) AFLC directs three specialized activities in addition to the AMAs: the Aerospace Guidance and Metrology Center at Newark AFS, OH; the Military Aircraft Storage Disposition Center at Davis-Monthan AFB, AZ; and the Air Force Contract Maintenance Center at Wright-Patterson AFB, OH.

c. The Air Force conducts its professional education and skills training programs primarily through Air University (AU) and the Air Training Command (ATC).

(1) Air University at Maxwell AFB, AL, is responsible for the Air Force professional education system. AU conducts research associated with the AF mission and administers various programs and courses designed to improve the professional capabilities of officers and NCOs from all commands. The principal schools in the Air University system are Squadron Officer School, Air Command and Staff College, and Air War College. Other components of Air University are the Air Force Reserve Officers Training

Corps, Air Force Institute of Technology, Extension Course Institute, AU Institute for Professional Development, Academic Instructor and Allied Officer School, Air Force Chaplain School, and the Air Force Senior NCO Academy.

(2) The Air Training Command, with headquarters at Randolph AFB, TX, is the free world's largest training system. ATC operates 16 training bases within the United States and 91 field detachments. The ATC mission includes recruiting, military training, technical training, and flying training.

d. Additional support functions are performed by Air Force major commands, including the Air Force Communications Service, US Air Force Security Service, and Headquarters Command, USAF.

(1) The Air Force Communications Service, with headquarters at Richards-Gebaur AFB, MO, maintains global communications, air traffic control, and air navigation systems for the Air Force and other Government agencies. Three major automated systems carry most of the command's communications: Automatic Digital Network (AUTODIN), Automatic Voice Network (AUTOVON), and Automatic Secure Voice Communications Network (AUTOSEVOCOM).

(2) Headquarters Command, USAF, at Bolling AFB, Washington, DC, provides administrative support for Headquarters USAF and Air Force personnel in the Washington, DC, area. Personnel of the command represent the widest variety of job-specialties in the AF.

e. Other support functions in the Air Force are performed by ten separate operating agencies.

(1) The Air Force Academy at Colorado Springs, CO, offers a four-year program that leads to a baccalaureate degree in science and a commission in the Regular Air Force. In addition to their academic studies, cadets receive instruction in military skills, leadership, and flying.

(2) Air Force Reserve directs and trains Air Force Reservists for extended active duty in the event of an emergency. AFRES conducts its activities through three regions, each of which has flying and nonflying units.

(3) The Air Reserve Personnel Center also operates under the direction and supervision of the Office of Air Force Reserve. This agency administers management and personnel programs for Air Force Reserve personnel not on extended active duty.

(4) The Air Force Accounting and Finance Center at Denver, CO, performs centralized accounting and finance functions for the Air Force.

(5) The Air Force Data Automation Agency at Gunter AFS, AL, performs consolidated data automation services in support of Headquarters USAF, major commands, bases, Office of the Secretary of Defense, and other Federal agencies. These services include automatic data processing, computer and management science activities, and the development of computerized management information.

(6) The Air Force Military Personnel Center at Randolph AFB, TX, manages and administers personnel plans, programs, policies, and guidance for all Air Force military personnel.

(7) The Air Force Office of Special Investigations at Washington, DC, provides global services in counterintelligence, criminal, and special investigations for all Air Force activities.

(8) The Air Force Audit Agency at Norton AFB, CA, evaluates the effectiveness and efficiency of managerial functions in Air Force financial, operational, and support activities.

(9) The Air Force Inspection and Safety Center, also at Norton, directs and monitors the Air Force inspection system and safety programs.

(10) The Air Force Intelligence Service at Fort Belvoir, VA, provides specialized intelligence services to USAF worldwide.

5. SUGGESTIONS FOR TEACHING:

a. Suggested time: 3-4-5

b. The instructor will probably find it difficult to stimulate student interest in this chapter because it deals with a variety of somewhat less "glamorous" Air Force support activities. Therefore, it may be advisable to allow individual students to select areas of special interest. For some students, certain activities of AFSC, such as test ranges and supersonic flight tests at Edwards AFB, will probably be more interesting than the activities of AFLC. Others may be interested in the Air Force Academy or in flight training activities conducted by ATC. Almost any topic in this phase will be more interesting for the student who reads beyond the material provided in the

text. The student who is fascinated by computers may transfer some of his enthusiasm to other members of the class through a report on the Air Force Data Automation Agency.

c. Emphasis in this chapter should be on areas of interest and the scope of Air Force support activities. Mastery of details is not particularly desirable.

d. Grab Bag--Role play a panel of retired AF people discussing coordination between combat and support commands and how it has changed over the years. Have a quiz where students must fit a command into its proper "category"--operational, support, or separate operating agency. Have a student explain the differences between the missions of AU, ATC, and AFA. Have your students list the commands involved in the development, purchase, distribution, use and disposition of a particular aircraft or weapon system.

6. INSTRUCTIONAL AIDS:

a. Films:

(1) SFP 1210 Decision for Leadership (ATC Officer Training), 23 min, color, 1964.

(2) SFP 1217 Your Air Force, 18 min, color, 1966.

(3) SFP 1285 The Reins of Command--Air Force Communications Service, 28 min, color, 1966.

(4) SFP 1655 What Makes a Man--The USAF Academy Story, 25 min, color, 1969.

(5) SFP 1830 Challenge Now--Junior Officers on the Job, 22 min, color, 1969.

(6) SFP 1889 Falcons in the Sky, 15 min, color, 1971.

(7) SFP 2013 Headquarters Command, USAF, 21 min, color, 1970.

(8) SFP 2021 AFCS's Three Party Line, 25 min, color, 1971.

(9) SFP 2145 Undergraduate Pilot Training, 38 min, color, 1972.

b. Slides:

(1) V-0072 Air Training Command (44 slides)

(2) V-0079 Air Force Systems Command (27 slides)

7. PROJECTS:

a. Students interested in management might be challenged by an in-depth study of the systems management concept used by AFSC. Individual reports on any of the commands and separate operating agencies discussed in this chapter (or any of the various branches or testing centers of the organizations) are relevant activities.

b. Grab Bag--Have your students reproduce the crests of the organization(s) of their choice. Have them find out the command mottoes and what they mean, history, etc. Have them develop a time line of weapons produced and distributed through AFSC and AFLC.

8. FURTHER READING:

a. Air Force Magazine, latest annual Air Force Almanac issue.

b. MacCoskey, Monro, Brig. Gen., The United States Air Force, New York: Frederick A. Praeger, 1967.

c. Operation Countdown, CAP, Ellington AFB, TX, 1966.

IDEAS FOR IMPROVEMENT OF THE TEXTBOOK
AND/OR INSTRUCTOR'S GUIDE AND TEACHING
TECHNIQUES MOST EFFECTIVE FOR THIS PHASE.
TO BE COMPILED AT END OF TEXT AND SENT TO JRC

CHAPTER V - ARMY, NAVY, AND MARINE CORPS AEROSPACE FORCES

This chapter examines the aviation components of the Army, Navy, and Marine Corps and describes the role of aviation activities in the field organization and operations of these Services. The chapter also discusses the reasons for separate military aviation services. Representative types of aircraft and long-range missiles employed by the Army and Navy are described. Of particular interest is the Navy's Fleet Ballistic Missile (FBM) force since it is a component of the nation's strategic offensive power discussed in Chapter II.

1. OBJECTIVES:

   a. Traditional Objectives - Each student should:

      (1) Know the mission of Army, Navy, and Marine aviation.

      (2) Know the principles of Army-Air Force aviation coordination as set forth by interservice agreement.

      (3) Be familiar with the types of aircraft employed by the Army, Navy, and Marine Corps.

      (4) Be familiar with the missile and nuclear capabilities of the Army and the Navy.

   b. Behavioral Objectives - Each student should be able to:

      (1) Outline the principle of Army-Air Force aviation coordination.

      (2) Identify and describe current Army, Navy, and Marine Corps aircraft and weapon systems.

      (3) Describe the principal missions of Army, Navy, and Marine combat aviation.

      (4) Identify the missile and nuclear capabilities of the Army and Navy.

2. SUGGESTED OUTLINE:

a. United States Army

(1) Mission: to control the land and people of the enemy in wartime

(2) Army-Air Force aviation coordination

(a) Army emphasis on close support, primarily with helicopters

(b) Air Force emphasis on heavier combat and airlift support, primarily with fixed-wing aircraft

(3) Army aviation organization and employment

(a) Types of divisions

(b) Airmobile division with most aircraft

(c) TRICAP division

(4) Army aircraft and their employment

(a) OV-1 Mohawk

(b) UH-1 Iroquois

(c) CH-47 Chinook

(d) U-1A Otter

(e) CH-54 Flying Crane

(f) AH-1G Huey Cobra

(g) Advanced aerial fire support system (AAFSS)

(h) Other Army combat support aircraft

(5) Army air defense artillery

(a) Nike-Hercules

(b) Improved Nike-Hercules

(c) Hawk

(d) Redeye

(e) Chaparral

(f) Vulcan

(g) Safeguard

(h) SAM-D

b. United States Navy

(1) Mission

(a) Maintain control of the sea and conduct land and air operations as necessary

(b) Strategic offensive forces (Polaris/Poseidon submarines)

(2) The aircraft carrier

(a) Major offensive instrument of sea power

(b) Advantages of flexibility

(c) Attack carrier organization

(3) Naval aircraft

(a) Specially designed for carrier operations

(b) Representative types: A-4 Skyhawk, A-6 Intruder, F-4 Phantom II, F-14 Tomcat, E-2A Hawkeye, P-3 Orion, S-3A Viking

(4) Ballistic missile submarines

(a) Nuclear powered

(b) Fleet ballistic missile (FBM) submarine force

(c) Polaris/Poseidon missiles

(d) Underseas long-range missile system (ULMS or Trident)

(5) Antiair warfare (AAW)

(a) Purpose of AAW operations

(b) AAW weapons: Talos, Terrier, Tartar, Sidewinder, Sparrow, Phoenix, antiaircraft guns

(6) Antisubmarine warfare operations

(a) ASW mission

(b) ASW problems

(c) HUK group operations

(d) ASW weapons: Lulu, Alfa, ASROC, SUBROC

c. United States Marine Corps

(1) Support mission of amphibious forces

(2) Marine aviation organization

(3) Revolutionary Marine aircraft: AV-8A Harrier

3. ORIENTATION:

This chapter can serve either as the final chapter of this unit, or it can follow Chapter II as a follow-up study of general purpose forces. In either event, its primary objective is to clarify for the student the reasons that each of the Services has its own aviation forces and the manner in which the other Services coordinate their aviation activities with those of the Air Force. The instructor may wish to review the course goals in the "Orientation" section of Chapter I before teaching this chapter.

4. SUGGESTED KEY POINTS:

a. The Army's primary mission is to conduct prompt and sustained land warfare whenever and wherever it is necessary. Army forces must be prepared for operations ranging from counterinsurgency to nuclear war. The Army's strategic defensive forces are integrated with the other Services under NORAD; however, the major part of its forces are general purpose forces integrated with the general purpose forces of other services in the US Readiness Command and in theater commands.

(1) Since air superiority is a prerequisite for large-scale land operations, the Army maintains its own air forces to augment and support ground operations. In this role, they complement rather than rival the aerospace forces of the Air Force. Agreements dating from 1966 have confirmed Army emphasis on helicopters for short-range airlift and fire support. The Air Force emphasizes fixed-wing aircraft for heavier payloads and longer range in airlift operations and heavier firepower and longer range in combat support.

(2) The Army maintains no distinct air arm but incorporates the major part of its aviation capabilities in divisions and pools the remainder at corps or field army level for the support of divisions. Most divisions employ approximately 100 aircraft for scouting, troop carrier, and fire support ("aerial artillery"). An exception is the airmobile (informally known as "air cavalry") division with more than 400 aircraft, mostly helicopters, and the ability to operate in all kinds of terrain. The airmobile division should not be confused with the "airborne" division. (The "airborne" division is designed for paratrooper operations with Air Force tactical airlift.)

** V-9136 pp 41-42, 179-181

(3) The Army's mission requires aircraft that are rugged, easy to maintain, simple to operate, and highly maneuverable. STOL capability is a high-priority consideration. Army aviation provides support within each of five land-combat functions: command, control, and communications; intelligence; airmobility; combat service; and firepower. These functions are performed by the following Army aircraft:

(a) OV-1 Mohawk--a twin turboprop two-seat aircraft capable of a speed of 300 mph. Used primarily as an observation and command aircraft.

(b) UH-1 Iroquois ("Huey") and CH-47 Chinook--heavy duty helicopters used in the rapid movement of troops. Payloads range from one to twelve tons, depending on the mission. The smaller fixed-wing U-1A Otter is also used for the movement of troops.

(c) CH-54 Flying Crane--used in addition to the CH-47 Chinook as a cargo helicopter for movement of troops and equipment, aeromedical evacuation, and evacuation of damaged equipment. Capable of lifting a 10-ton payload either in the form of a detachable van or as a sling load.

(d) AH-1G Huey Cobra--an advanced model of the UH-1 Iroquois equipped with a variety of weapon systems and used as an attack helicopter.

(e) Advanced aerial fire support system (AAFSS)--a low subsonic, vertical rising, stable vehicle under development to augment ground fire against an enemy.

(f) Other Army combat support aircraft include: O-1 Bird Dog observation aircraft; U-6A Beaver, U-8D Seminole, and U-21 Ute utility aircraft; and OH-6A Cayuses and OH-58 Kiowa light observation helicopters.

(4) The Army maintains air defense artillery (ADA) units to support ground forces, defend the United States and US assets overseas, and monitor the Safeguard ballistic defense system. Current weapon systems used by ADA units include the following:

(a) Nike-Hercules--designed for defense against the medium- and high-altitude air threat. Travels at speeds of more than 2,100 mph at ranges over 75 miles. Two-stage supersonic missile that may be armed with a nuclear or high-explosive warhead.

* V-9136
pp 183-185

(b) Improved Nike-Hercules--designed for use against smaller, higher flying targets. Has an improved detection capability and tactical controls.

(c) Hawk--highly mobile system designed for low- and medium-altitude targets. All-weather missile with a range over 20 miles and an altitude over 38,000 feet. Can fire simultaneously at two or three different targets.

(d) Redeye--surface-to-air, low-altitude air defense missile for use in a forward battle area. Can be carried by a man and fired from the shoulder.

(e) Chaparral--highly mobile, visually directed guided missile system. This system includes a full-tracked vehicle mounted with a launcher and four Chaparral missiles. May be used to complement Hawk and Nike-Hercules low-altitude coverage.

(f) Vulcan--Army's newest fair-weather, visually directed automatic weapon system. Consists of a turret-mounted M61A1 "Gatling" 20 mm gun, an ammunition storage and feed system, a gyro lead-computing sight, and a ranging radar.

(g) Safeguard--missile system consisting of Spartan and Sprint missiles for defense against intercontinental ballistic missiles. Includes radars, computer system, power generation and environmental equipment.

(h) SAM-D--planned as an air defense system for use in battlefield and continental defense against high-performance aircraft. Will be capable of firing missiles either in single shots or in close-sequence salvos.

b. The primary mission of the US Navy is to maintain control of the seas and to conduct land operations as necessary. Nuclear submarines armed with Polaris and Poseidon missiles represent the Navy's strategic offensive mission. The fleet air arm does not function as a separate fighting force. Like those of the Army, most of the Navy's forces can be classed as general purpose forces.

(1) The aircraft carrier is a major offensive instrument of naval sea power. It provides the main striking power of the carrier task force, which includes cruisers and destroyers primarily in defensive roles. Carrier-launched air strikes can be made rapidly and frequently over short ranges, and, because of the carrier's mobility, air strikes can be made from unpredictable directions. The naval air arm also has a nuclear capability.

*** V-9137
pp 115-134

(2) Naval aircraft are usually designed especially for carrier operations--folding wings and tails to conserve parking space, short takeoff and landing capability, and reinforced landing gear and fuselages. Although the Navy is interested in helicopters, it has adapted many high-performance fixed-wing aircraft for use on carriers. Representative Navy aircraft include the following:

(a) A-4 Skyhawk--a lightweight attack and support aircraft capable of delivering conventional or nuclear weapons. Equipped with 20 mm guns, rockets, and missiles.

(b) A-6 Intruder--an attack bomber capable of detecting targets and delivering conventional and nuclear explosives including Sidewinder and Bullpup missiles. Extremely accurate subsonic system with a speed of almost 600 mph and a combat radius of 1,100 nautical miles.

(c) F-14 Tomcat--a swept-wing fighter aircraft with a maximum speed in excess of mach 2 and a combat capability at altitudes over 50,000 feet. Equipped with an AWG-9 weapon system that can launch and fire up to six Phoenix missiles at six separate targets. It can carry bombs, rockets, 20 mm Vulcan cannon, and Sidewinder, Sparrow, and Phoenix missiles.

(d) F-4 Phantom II--the mainstay of the Navy fighter force. It can carry Sparrow missiles and approximately eight tons of bombs, mines, and rockets.

(e) E-2A Hawkeye--the Navy's airborne early warning command and control aircraft. Its primary mission is to patrol the approaches to the fleet and detect an impending attack by enemy aircraft, missiles, or sea forces. It also provides strike and traffic control, search and rescue guidance, and communications relay service.

(f) P-3 Orion and S-3A Viking--specially equipped aircraft used in antisubmarine warfare operations. The P-3 Orion is a land-based aircraft with operational speeds ranging from

150 to 380 knots and a ceiling over 30,000 feet. It carries sonobuoys, radar, electronic countermeasures, and various navigation devices. Its armament includes torpedoes, depth charges, bombs, and rockets. The S-3A Viking is a carrier-based, all-weather aircraft scheduled to replace the S-2 Tracker series sometime in 1974. It has folding wings and a large vertical tail that folds sideways. It can operate at altitudes above 35,000 feet at speeds in excess of 300 knots.

(3) The fleet ballistic missile (FBM) submarine force is the Navy's contribution to the Triad. Each FBM submarine carries 16 Polaris or Poseidon missiles with ranges from 1,500 to 2,500 miles. Divided between the Atlantic and Pacific fleets, the FBM force is directly responsive to the Joint Chiefs of Staff and the President. The FBM system is based on the Polaris missile supplemented by the Poseidon. The Poseidon is fitted with multiple independently targeted reentry vehicles (MIRV) and has a greater payload capability than the Polaris.

** V-9137 pp 50-55, 135-160

(4) Navy antiair warfare (AAW) operations are directed against aircraft and missiles. Air-to-air missiles, surface-to-air missiles, and antiaircraft guns are employed in antiair warfare operations. The Navy employs three types of surface-to-air missiles: the Talos, the Terrier, and the Tartar.

(5) In order to defend against the world's largest submarine fleet (Russia's), the United States must maintain a capability to conduct antisubmarine warfare (ASW) operations. A major problem in developing ASW techniques is that of locating the submarine. The Navy uses a sonar device that presents a submarine image similar to that produced on conventional radar screens. Aircraft equipped with radars can detect the snorkels of cruising submarines. And devices can be developed to trace infrared radiations. Currently, however, the United States does not have the capability for long-range tracking of submerged submarines.

* V-9137 pp 133-134

(a) ASW forces have a threefold mission: destroy enemy submarines before they get to sea, destroy them enroute to their targets, or destroy them in their target areas. The hunter-killer (HUK) group is responsible for the second phase of the ASW mission. The HUK group is a trained submarine-killer team equipped with submarines, S-2E Tracker, SH-3A Sea King helicopters, and other aircraft.

(b) ASW weapons include: the acoustic homing torpedo; Lulu, an airborne depth charge; Alfa, a rocket-fired depth charge; ASROC, a long-range weapon installed on surface ships; and SUBROC, a long-range weapon installed on submarines.

c. The mission of the US Marine Corps is to provide ground and air Fleet Marine Forces. Since the Marine combat specialty is amphibious operations, Marine air forces are trained to support such operations from land bases and aircraft carriers.

(1) Aviation commands in the Fleet Marine Force have the same organizational structure as the Marine division. However, since the aircraft wing is a task organization tailored for specific purposes, no two Marine aircraft wings contain the same number or mixture of units. The squadron is the basic aviation unit within a wing, and each squadron will have from 12 to 24 aircraft, depending upon the types.

(2) The AV-8A Harrier is the most revolutionary aircraft to enter the Marine aerospace force in recent years. This aircraft can operate as a helicopter or as a fixed-wing aircraft. It can convert from a hovering position to forward flight at speeds up to 600 mph. The Harrier can carry almost all external weapons carried by other aircraft, and, in addition, it is equipped with the 30 mm Aden gun for use in air-to-ground and air-to-air roles. This versatile aircraft can be used in close air support, air combat, and ASW and escort operations.

5. SUGGESTIONS FOR TEACHING:

a. Suggested time: 3-4-5

b. Guest speakers might be invited into the class to discuss their respective Services. These speakers may be faculty members who are Army, Navy, or Marine Reservists, or they may be active-duty servicemen from nearby bases. You could also invite JROTC cadets of the various services to sit as a panel or give briefings.

c. Grab Bag--Develop a problem situation where JCS must decide the proper mix of forces to use. Conduct a debate on unification. In the event of unification, have your students design the new uniform.

6. INSTRUCTIONAL AIDS:

   a. Films:

      TF 6554 The Army/Air Force Team in Action, 28 min, color, 1970.

   b. Slides:

      (1) V-0031 United States Army (33 slides)

      (2) V-0032 United States Navy (41 slides)

      (3) V-0036 The Fleet Ballistic Missile Weapon System (39 slides)

7. PROJECTS:

   a. Helicopter and V/STOL development are related to Chapter IV, but they have their place here too. Periodicals will provide more information on Poseidon.

   b. Grab Bag--Have your students trace the Canadian armed services unification and report on its progress. Hold a debate on whether or not the Army should have its own Air Arm again. Conduct a field trip to a JROTC or active duty unit of a sister service.

8. FURTHER READING:

   a. Aerospace Industries Assn. of America, Inc., The Aerospace Year Book, latest edition, Washington, DC: Spartan Books.

   b. Air Force Magazine, latest annual Air Force Almanc issue.

   c. The Air Officer's Guide, Harrisburg, Pa.: Stackpole Books, 1968.

   d. Green, William and Pollenger, Gerald, The Aircraft of the World, New York: Doubleday & Co., 1965.

   e. Donovan, James A., Col., USMC (Ret), The United States Marine Corps, New York: Frederick A. Praeger, 1967.

   f. AFROTC, USAF Present and Future, Maxwell AFB, Air University, 1969.

   g. Harvey, Frank, Strike Command, New York: Duell, Sloan & Pearce, 1962.

   h. Borklund, C.W., The Department of Defense, New York: Frederick A. Praeger, 1968.

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